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## DISCUSSION.

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### THE ECONOMIC THEORY OF MACHINES.

*(Reply to Mr. Stuart Wood.)*

I would ask the courteous hospitality of the Editors of the ANNALS for a response to some observations of Mr. Stuart Wood, in the January number of this journal, in his examination of my work, "*Teoria economica delle macchine.*" In this brief reply I shall endeavor to be animated by the calm scientific spirit of which this journal is so conspicuous an example. It constitutes the principal element of fruitfulness in polemical writing, which instead of becoming mere personal strife, may make notable contributions to the discovery of the truth.

I regret in the first place that Mr. Stuart Wood should have incorrectly interpreted my criticisms of his work, in thinking that my book contains a charge of plagiarism against him. In no place have I said that he copied the doctrine of v. Thünen, without citing his sources, and have merely affirmed on p. 57 of the work aboved named, that this theory in its most concise form was *held* by Stuart Wood, without any great novelty of demonstration. Now to *hold* is not to *re-produce*, but signifies to advocate a doctrine on one's own authority, understanding its nature and its actual importance. So true is this that on p. 58 I attempt to discover the causes, which in my opinion had led Mr. Stuart Wood astray. This I certainly would not have done if it had seemed to me that the essays of the distinguished economist were no more than a reproduction of the ideas of v. Thünen. I have no difficulty in believing that the remarkable studies of the profound German thinker were not known to my esteemed opponent, and it is a pleasure to me to think that my modest book has led him

to procure the admirable works of v. Thünen. They should be considered a classic among the exact and original researches of economic science in late years, and one may well recall upon this occasion the motto which Quintilian applied to Cicero, and McCulloch to Ricardo, "*Ille se profecisse sciat cui Thünen valde placebit.*"

I trust that on longer consideration Mr. Wood will understand why I call v. Thünen profound, although I have shown that in one analysis the German economist has fallen into error. One ambiguity, however, in an argument, even though grave, could not detract from the merit of a great author. I go further and admit that even when an entire theory is considered erroneous, one may recognize the eminence of the author, if, even though he may not have done justice to the most obvious interpretation of the phenomena, still, in considering the subject from a particular point of view, he proceeds with a rigorous analysis. But this is certainly not the case with v. Thünen, through whom more than through any other, the consideration of the effects exercised by the distance from markets on the different methods of cultivation, have been made permanent acquisitions of our science.

Leaving this preliminary ambiguity we come to the critique which I made of doctrines held by Stuart Wood and his reply. I said that in Wood's analysis of the substitution of machinery-capital for wages-capital, he overlooks completely the wear and tear, which is the most important element in the comparison made by the *entrepreneur* between the advantages of the two systems, and that he confuses the rate of interest with the rate of profits. Stuart Wood maintains in the first instance that the wear and tear are not ignored, and advances as proof a passage from one of his articles on wages. He ironically encourages the belief that I thought I had made a discovery in emphasizing this factor, which had escaped the researches of previous economists. But the passage cited by Stuart Wood shows clearly that he does not understand the effective importance of wear and

tear, for he believes that he has solved the grave questions to which it gives rise by affirming the possibility of insurance against loss from it, and neglecting it entirely in the comparison of the conditions of mechanical and manual labor. With my slight competence in scientific matters, I leave to others the honor of discoveries, and am not naïve enough to believe that I have made any. It was my modest purpose, instead, to examine the special influence which wear and tear exercise on the price of products, and until my conclusions be refuted—which Stuart Wood has not done—I must persist in considering my investigations of some utility as tending to demonstrate that the effect of the introduction of machines is different, according as the wear and tear are partial or total, and that there is an effective relation between the wear and tear and the rate of profit.

As to the difference between interest and profit I accept the classic English theory, whereby profit is a single return, which may abstractly be attributed to various sources, but concretely is indivisible, and which constitutes the measure that regulates the activity of production.

Finally, Mr. Wood accuses me of unjustly asserting that he does not distinguish between the rate and amount of interest, although I do not say this at all, but assert that I supposed the cause of his error to lie in such a defect of reasoning. Since he often speaks of the rate of interest and the price of labor as homogeneous factors, the hypothesis expressed by me on p. 58 in a tentative form was evidently legitimate.

On the other hand it is not true that I attributed to Wood ideas which he had not expressed, and that I had fallen into deplorable errors of this nature by a wild desire for polemics. I may not at times understand correctly the thought of an author, but it is always my effort, so far as my powers permit, to enter into the conceptions of others, and to study with special attention those which seem to me fallacious. Thus I applied myself to the theories of Stuart Wood, and I do not repent of it, because though differing with him in the

groundwork of theory, I have found much to admire in his method and recognize the worth of some of his views.

With this statement which accords with my inmost convictions, I close this brief reply.

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